دانشگاه علوم پزشکی اراک

گفتاردرمانی در بخش مراقبت های ویژه نوزادان

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نقش گفتاردرمانی در نوزادان preterm

- ارزیابی و مداخله ی:

1. مهارت های حرکتی دهانی
2. مکیدن
3. هماهنگی مکیدن، بلع و تنفس

PREMATURE/PRETERM

- **Infants born before 37;0 weeks gestation**

- the preterm newborn is not able to feed orally. So, use of alternative feeding methods until they are able to take up oral feeding

- باید گفته شود که این تحریکات فقط برای نوزادان نارس نیست.

- بلکه برای:

1. نوزادان با مشکلات پزشکی پیچیده
2. نوزادان ترم (نوزادان با اختلالات آناتومیکی، فیزیولوژیک و نورولوژیک)

نیز کاربرد دارد.

ضرورت و فواید مداخلات حسی حرکتی

- بهترین زمان مداخله:

- مغز نوزاد نارس به طور مداوم در حال ایجاد ارتباطات سیناپسی عصبی در پاسخ به ورودی های حسی (sensory input) و محرکات محیطی است.

- مداخله ی دهانی حرکتی مداخله ای است که رشد و رسش نورولوژیک را در طی دوه ای که دارای نوروپلاستیسیتی بالاست فراهم می کند.

ضرورت و فواید مداخلات حسی حرکتی

- کاهش مدت زمان بستری
- دستیابی سریع تر به تغذیه ی مستقل
- کاهش تجارب منفی تغذیه
- تسریع انتقال تغذیه از لوله به تغذیه ی دهانی
- حس مثبت خانواده در کمک به نوزاد خود
- الگوی مکیدن رسش یافته تر

ضرورت و فواید مداخلات حسی حرکتی

- دامنه ی بزرگتر مکش و یا فشرده سازی
- افزایش وزن گیری
- بهبود هضم غذا
- پیشگیری از مشکلات نورولوژیکی در سال های بعد

مداخله حرکتی دهانی

- مداخله حرکتی - دهانی به عنوان اعمال کشش و فشار بر ساختارهای اطراف و داخل دهان مانند لب ها، لثه، گونه ها، کام و زبان تعریف می شود؛ که منجر به بهبود قدرت لب، زبان و گونه، افزایش دامنه حرکت لبها، تحریک بلع و بهبود مکیدن می شود.

Pediatric feeding therapy

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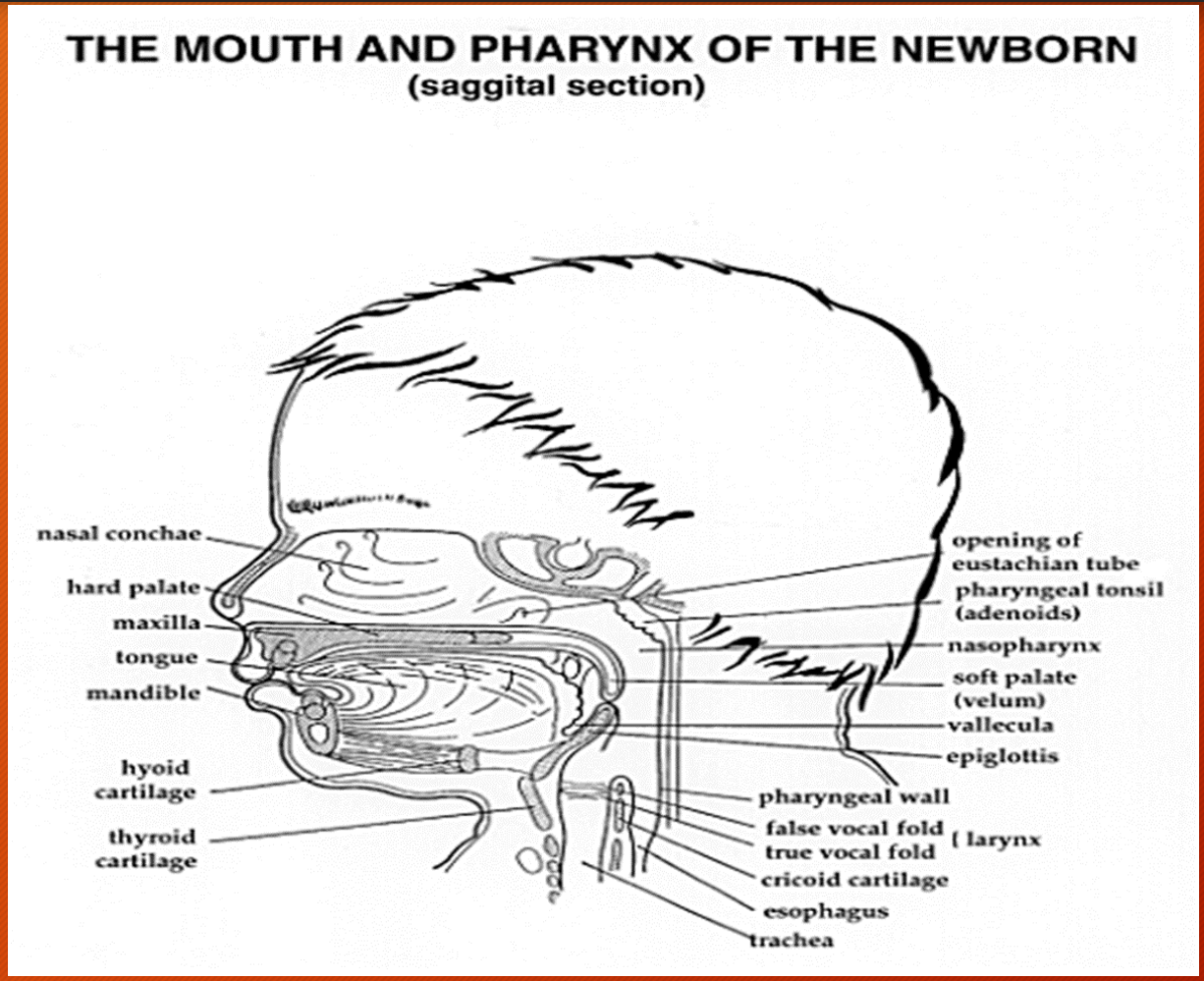
Anatomy and physiology



Sucking & Swallowing Development

Intra-Uterine Development of Feeding

- Sucking develops around 15 to 16 weeks gestation
- Swallowing develops around 14 to 17 weeks gestation and can be observed
- during ultra sound at 28 to 29 weeks gestation
- A fetus swallows approximately 15 oz of amniotic fluid per day
- Coordinated sucking and swallowing – by 35 to 40 weeks (Lipchock et al, 2012, Brown,J & Ross, E, 2011)

Different reflexes involved in feeding

• Rooting reflex: When a baby's mouth, lips, cheek, or chin are touched by an object, the head and mouth turn towards the object and the baby opens its mouth. This reflex allows a baby to seek out and grasp a nipple.

• Suck/swallow reflex: After opening the mouth when baby's lips and mouth area are touched, suckling or sucking movements begin. As liquid moves into the mouth, the tongue moves it to the back of the mouth for swallowing.

• Tongue thrust reflex: When the lips are touched, the baby's tongue moves out of the mouth. This reflex allows for feeding from the breast or bottle but not from a spoon or cup.

• Gag reflex: When an object, such as a spoon or solid food, is placed way back in the mouth, the object is quickly moved back out of the mouth on the tongue.

- This reflex is one reason for waiting until a baby is 4 to 6 months old to feed solid foods.
- These reflexes may be stronger or weaker, or last longer than normal, in babies who are delayed in their development.

Sequence of Infant Development and Feeding Skills in Normal, Healthy Full-Term Infants

Baby's Approx. Age	Mouth Patterns	Hand and Body Skills	Feeding Skills or Abilities
Birth through 5 months	• Suck/swallow reflex • Tongue thrust reflex • Rooting reflex • Gag reflex	• Poor control of head, neck, trunk • Brings hands to mouth Around 3 months	• Swallows liquids but pushes most solid objects from the mouth
4 months through 6 months	• Draws in upper or lower lip as spoon is removed from mouth • Up-and-down munching movement • Can transfer food from front to back of tongue to swallow • Tongue thrust and rooting reflexes begin to disappear • Gag reflex diminishes • Opens mouth when sees spoon approaching	• Sits alone easily • Transfers objects from hand to mouth	• Begins to eat ground or finely chopped food and small pieces of soft food • Begins to experiment with spoon but prefers to feed self with hands • Drinks from a cup with less spilling

Sequence of Infant Development and Feeding Skills in Normal, Healthy Full-Term Infants

Baby's Approx. Age	Mouth Patterns	Hand and Body Skills	Feeding Skills or Abilities
8 months through 11 months	• Moves food from side-to side in mouth • Begins to curve lips around rim of cup • Begins to chew in Rotary pattern (diagonal movement of the jaw as food is moved to the side or center of the mouth)	• Sits alone easily • Transfers objects from hand to mouth	• Begins to eat ground or finely chopped food and small pieces of soft food • Begins to experiment with spoon but prefers to feed self with hands • Drinks from a cup with less spilling

Sequence of Infant Development and Feeding Skills in Normal, Healthy Full-Term Infants

Baby's Approx. Age	Mouth Patterns	Hand and Body Skills	Feeding Skills or Abilities
10 months through 12 months	• Moves food from side-to side in mouth • Begins to curve lips around rim of cup • Begins to chew in Rotary pattern (diagonal movement of the jaw as food is moved to the side or center of the mouth)	• Sits alone easily • Transfers objects from hand to mouth	• Begins to eat ground or finely chopped food and small pieces of soft food • Begins to experiment with spoon but prefers to feed self with hands • Drinks from a cup with less spilling

- The ability to safely and efficiently feed by mouth is based on oral-motor competence, neurobehavioral organization, and gastrointestinal maturity.
- Infants successfully make the transition to oral feedings as they approach term gestation, infants who were very immature at birth have historically had the most difficulty achieving this milestone.
- Postnatal complications (chronic lung disease, intraventricular hemorrhage, seizures, and so on) are also associated with delays in the onset of the first feeding, as well as with delays in achieving full enteral intake.

Non Nutritive sucking (NNS)

- Non-nutritive sucking (NNS) is the type of sucking seen when an neonate is not feeding. In preterm neonates, NNS is generally seen as a precursor to nutritive sucking and, thus, several studies have focused on this skill in this population.
- Numerous studies indicate that, like NNS, nutritive sucking skills generally improve with maturity, as well as with practice .

Nutritive sucking

- Negative air pressure via intraoral vacuum.
- Sucking pads in cheeks provide stability.
- Tongue raises against soft palate Muscles involved include- suprahyoid, infra hyoid, mylohyoid, genio hyoid, masseter, medial and lateral pterygoid, and temporalis
- Tongue elevates lateral borders to form a trough to direct milk to be swallowed.

Nutritive sucking

- Involves the coordination of suck: swallow : breathe
- Suck: swallow: breathe pattern 1:1:1 ratio
- Safe oral feeding of infants necessitates the coordination of suck-swallow-breathe. Lau et al. 2003

SUCKING, SWALLOWING, BREATHING

- The S-S-B sequence is generally thought to be appropriately developed by around 37 weeks gestation in healthy term infants.
- (preterm infants demonstrate difficulty with this coordination)
- As breastfeeding begins, the infant sucks more rapidly.

Assessment

What the SLP assesses?

- Birth History
- Oral structures/oral phase of feeding/swallowing
- Respiration/Work of breathing
- Sensory System
- Reflexes
- Non-nutritive vs. Nutritive sucking
- Gross motor
- Risk for aspiration

Assessment

- Maternal history, previous lactation experience
- Mother-infant interaction
- Newborn behavior
- Non-nutritive sucking assessment
- Breastfeeding assessment
- Bottle assessment

Non-Nutritive Sucking Assessment

- Examiner typically uses a gloved finger in the infants mouth.
- Feel for tongue placement and movements.
- May also see use of a pacifier.

Non-Nutritive Sucking Assessment

- POSITIVE ITEMS

- Rooting reaction
- Easy beginning of sucking
- Labial sealing
- Tongue central groove
- Peristaltic tongue movement
- Jaw raising and lowering movement
- Labial , tongue and jaw coordination
- Sucking strength
- sucking rhythm

Non-Nutritive Sucking Assessment

- NEGATIVE ITEMS
  - Bites
  - Excessive jaw excursion
  - Stress signals

Nutritive Sucking and Swallowing Assessment

- May be at breast or bottle or both
- SLP examines management of secretions, suck-swallow-breathe coordination, swallowing, and breathing
- May refer for Video Oropharyngeal Swallow Study (VOSS)

Assessment

- In clinical practice, most feeding assessments will commence with an examination of the oral region and an assessment of oral reflexes.
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- However, research suggests that the presence of oral reflexes and/or feeding-like behaviors do not necessarily indicate that the neonate is ready for oral feeds.
- Thus, factors other than those assessed in a basic oral examination must also be considered when deciding whether an neonate is ready to commence oral feeding.

Difficulty with sucking patterns

- The sucking patterns of preterm neonates often remain significantly less coordinated and less efficient than those of full-term neonates .

- Besides potentially prolonging the need for tube feeding and delaying discharge to home, several studies have reported that ongoing sucking problems in preterm neonates at or around term age are predictive of poorer developmental outcomes later in childhood

Difficulty with SSB coordination

- preterm neonate display frequent oxygen desaturation events during feeding .
- A number of studies have focused on the incidence of apnea events in preterm neonates during oral feeding

Intervention

Oral Motor Interventions (OMIs)

- Early oral motor interventions (OMIs) are beneficial for oral feeding in preterm infants.

  OMI is defined as sensory stimulation of the lips, jaw, tongue, soft palate, pharynx, larynx and respiratory muscles, which are thought to influence the physiological underpinnings of the oropharyngeal mechanism in order to improve its functions.

Exercises to stimulate sucking

1. Stroke cheeks from ear to mouth

2. Stroke & stretch lips

3. Massage under chin

Oral tactile stimulation

- Oral tactile stimulation before feeds appears to improve frequency of sucking.
- NNS for 5-10 mins before oral feeds appears to improve state control for feeding, physiological stability during feeds, and volume consumed during feeds.

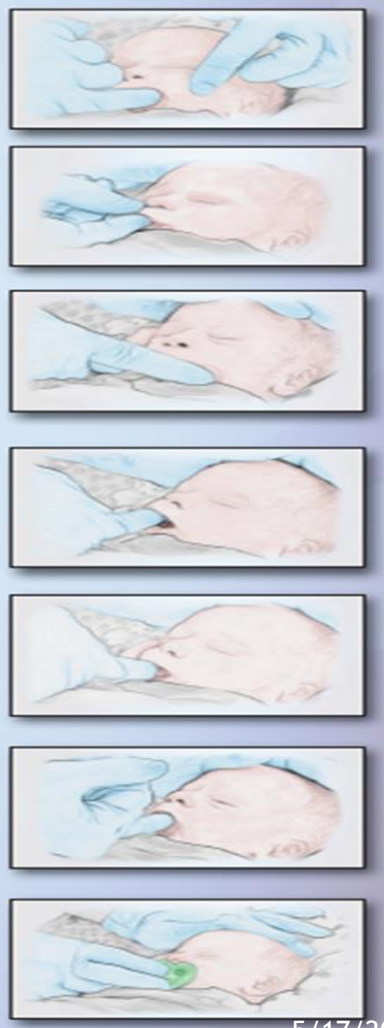
Premature Infant Oral Motor Intervention (PIOMI)

- For preterm neonatal with 30 weeks GA
- Edited Beckman protocol
- By ST, OT and nurses
- Awake and conscious

PIOMI

PREMATURE INFANT ORAL MOTOR INTERVENTION

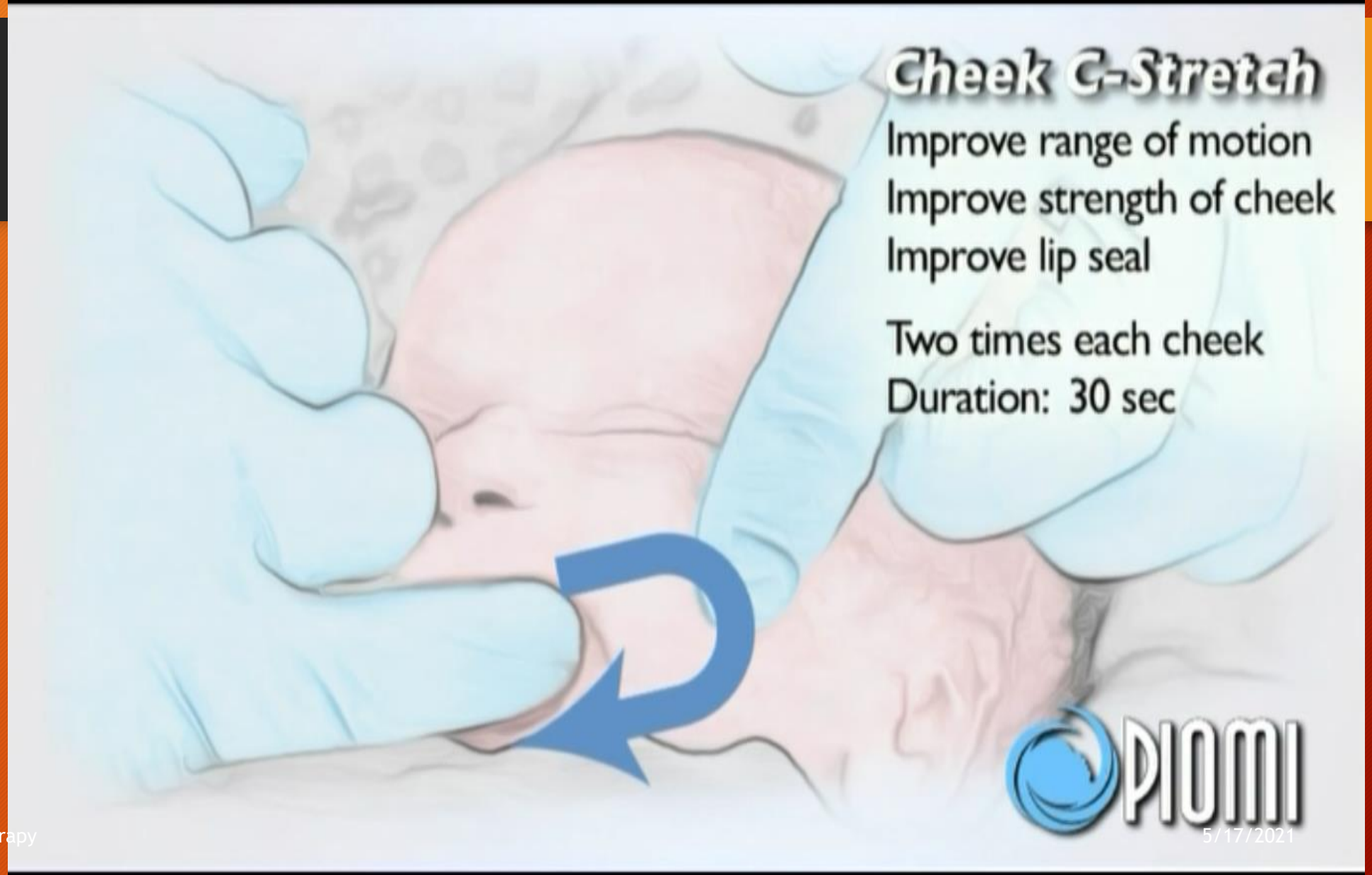
8 Steps	Technique
Cheek C - Stretch (30 Sec.)	One finger in the cheek and one outside cheek. Slide and stretch tissue front to back toward the ear, & back to front. Move slowly. Do both cheeks twice.
Lip Roll (30 Sec.)	Gently roll the lip between your thumb and finger (like rolling a pea). Roll both sides of upper lip once. Roll both sides of lower lip once.
Lip Curl or Lip Stretch (30 Sec.)	Compress lip between thumb and finger, and curl downward. Curl both sides of upper lip once, and both sides of lower lip once. If lip is too small to grip for the curl, do the Lip Stretch: Lay finger across upper lip, gently compress and stretch side to side. Repeat on lower lip.
Gum Massage (30 Sec.)	Use finger to put gentle pressure on outside of upper gum. Move finger slowly around upper gum to other side of mouth. (Be sure to touch outer gum surface, not biting surface.) Repeat on lower gum.
Lateral Borders of Tongue/ Cheek (15 Sec.)	Put finger beside tongue and push to the middle. Then move finger back into cheek, stretching it. Repeat on the other side of tongue/cheek.
Midblade of Tongue/ Palate (30 Sec.)	Use finger to put pressure on roof of mouth for 3 seconds. Move finger down to tongue and gently press tongue down. Move finger back up to hard palate. Repeat these movements twice.
Elicit a Suck (15 Sec.)	Put finger or pacifier on tongue and gently stroke to allow sucking.
Support for Non-Nutritive Sucking (2 Min.)	Allow sucking on finger or pacifier for 2 minutes.



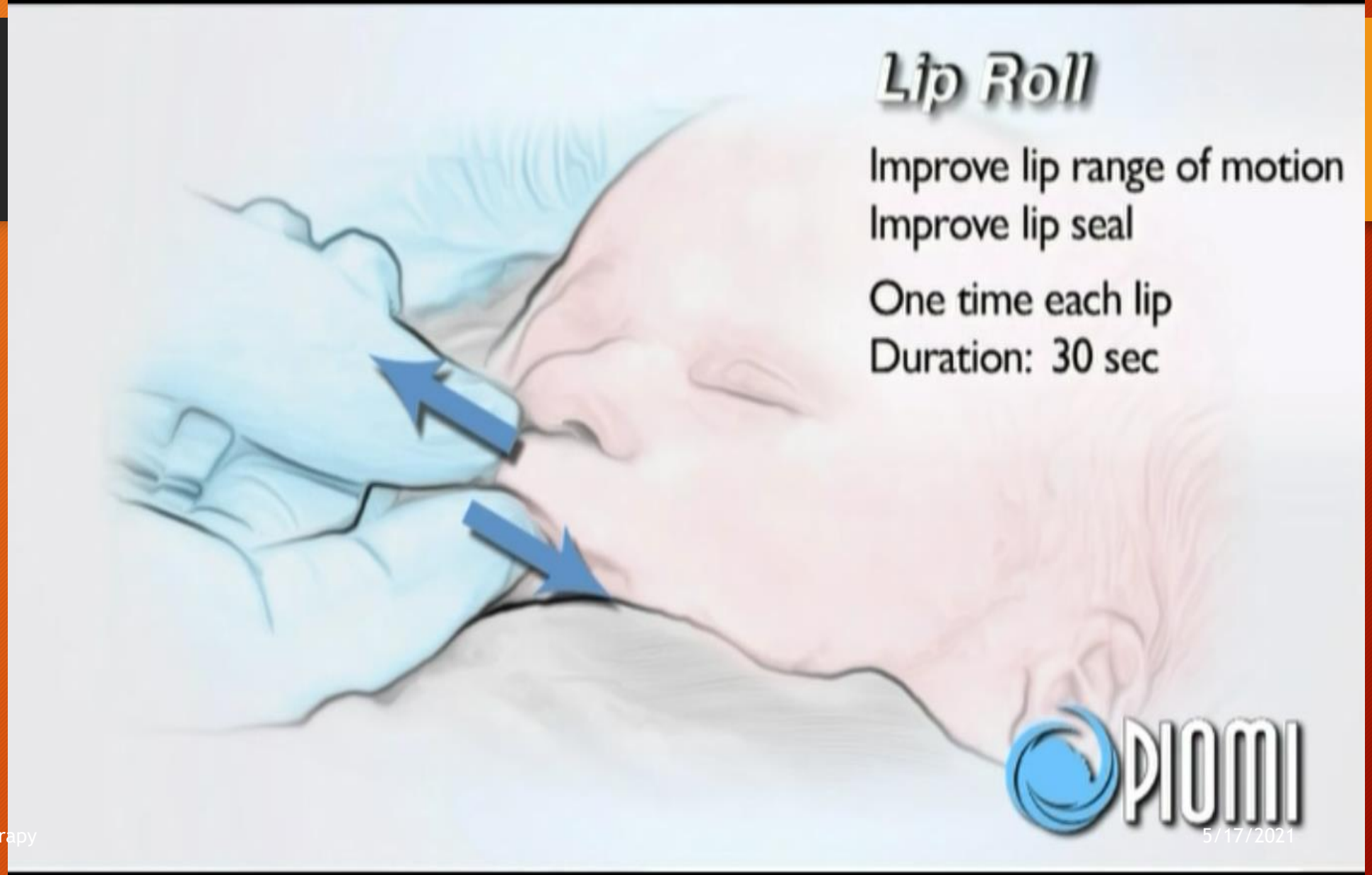
Lessen, B.S. (2011).Effect of the Premature Infant Oral Motor Intervention (PIOMI) on Feeding Progression and Length of Stay in Preterm Infants. Advances in Neonatal Care, 11(2), pp129-139. Modified (08/2007) from: Beckman, D.A. (1986, Rev 2005). Oral Motor Assessment and Intervention. Beckman and Associates, Inc. 1211 Palmetto Avenue, Winter Park, FL 32789.[update] www.beckmanoralmotor.com

Step 1 Cheek C-Stretch

PIOMI


Cheek C-Stretch
Improve range of motion
Improve strength of cheek
Improve lip seal
Two times each cheek
Duration: 30 sec
PIOMI

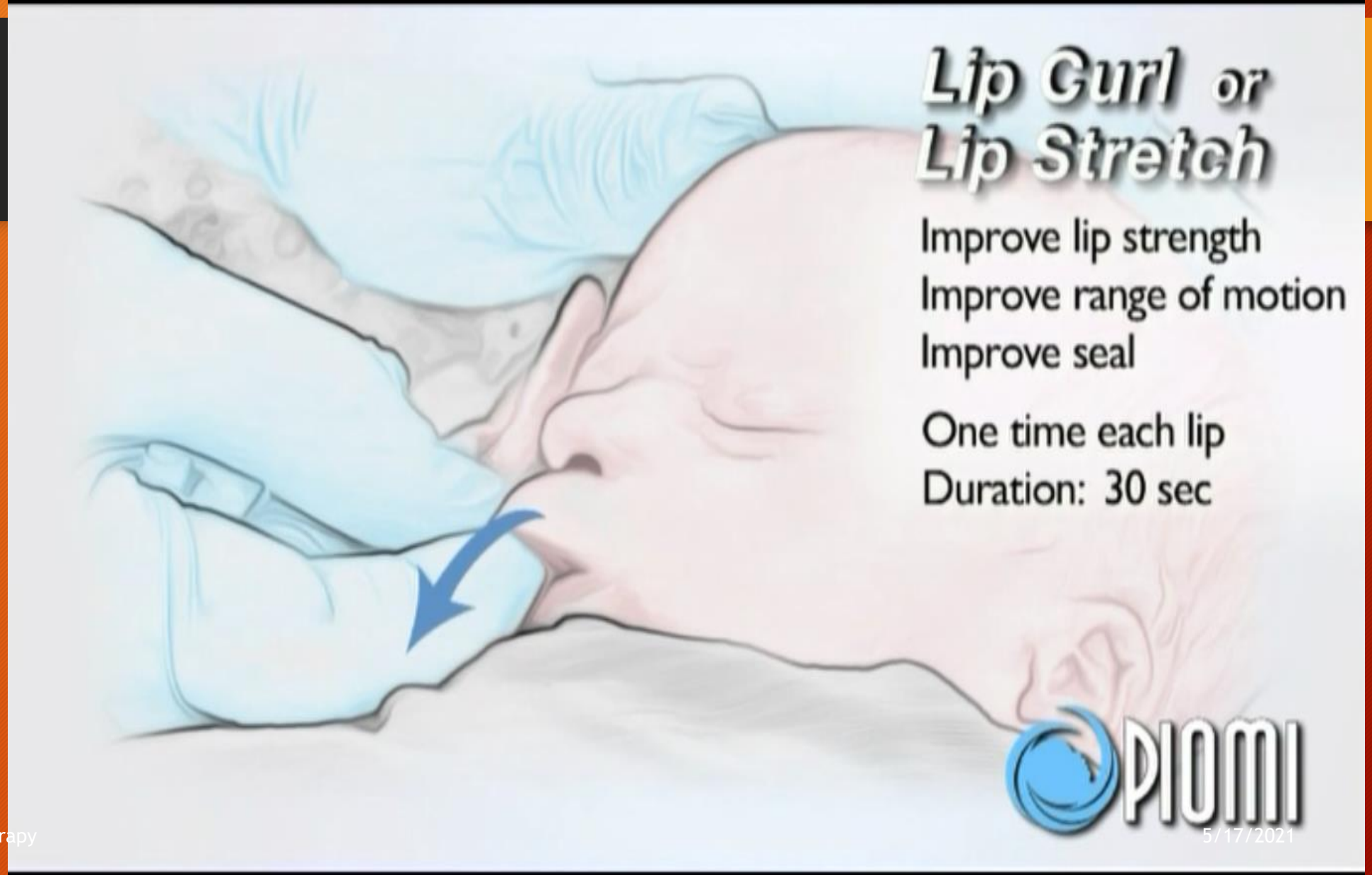
Step 2 Lip Roll


Lip Roll
Improve lip range of motion
Improve lip seal
One time each lip
Duration: 30 sec
PIOMI

Step 3

Lip Curl or Lip Stretch

PIOMI


Lip Curl or
Lip Stretch
Improve lip strength
Improve range of motion
Improve seal
One time each lip
Duration: 30 sec
PIOMI

Step 3 alternate Lip Stretch

PIOMI

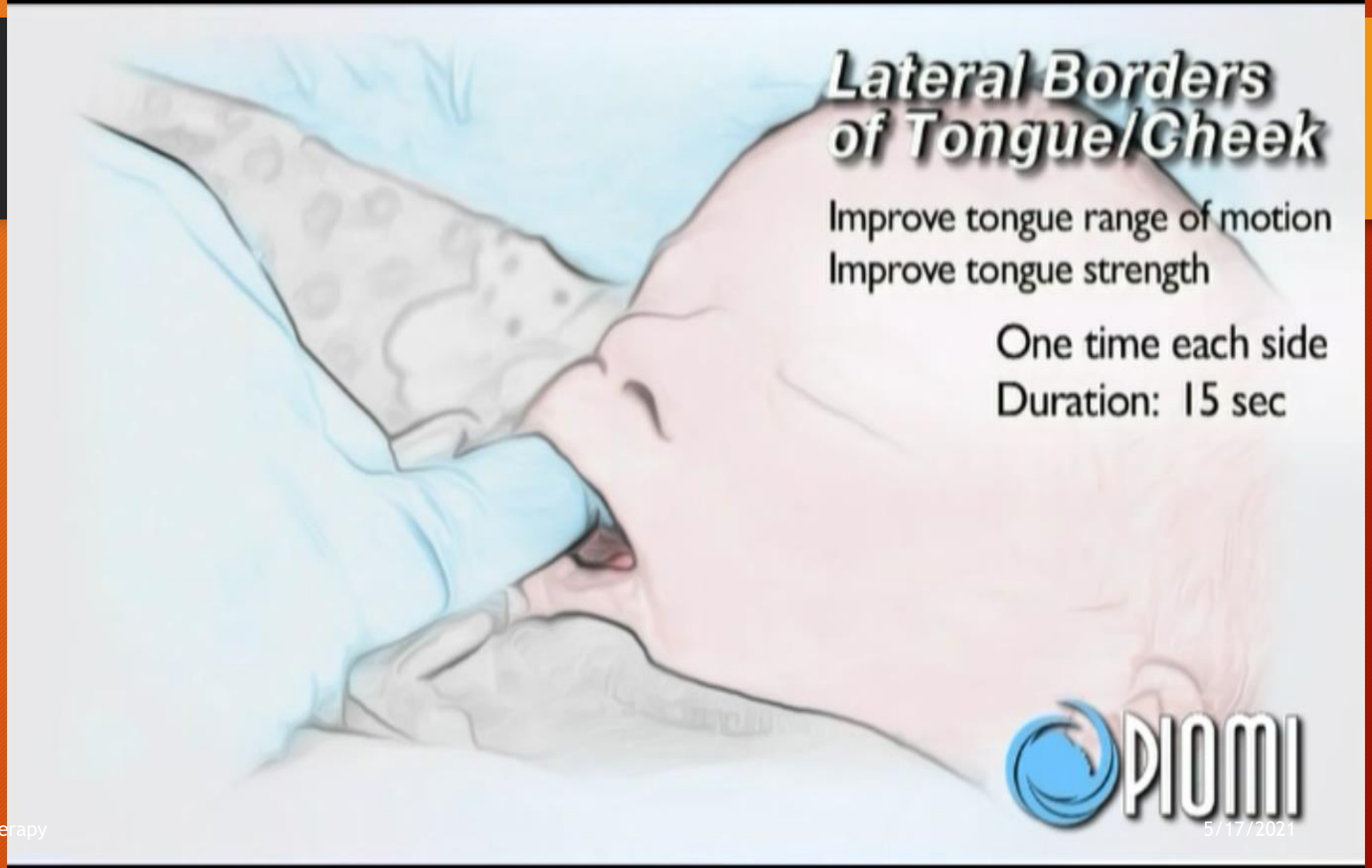
Step 4 Gum Massage

PIOMI


Gum Massage
Improve tongue's range of motion
Stimulate swallowing
Improve suck
Two times
Duration: 30 sec
PIOMI

Step 5 Lateral Borders of Tongue/Cheek

PIOMI


Lateral Borders of Tongue/Cheek
Improve tongue range of motion
Improve tongue strength
One time each side
Duration: 15 sec
PIOMI

Step 6 Midblade of Tongue/Palate

PIOMI


Midblade of Tongue/Palate
Improve tongue range of motion
Improve tongue strength
Improve suck
Two times
Duration: 30 sec
PIOMI

Step 7 *Elicit a Suck*

PIOMI


Elicit a Suck
Improve suck
Improve soft palate activation
Duration: 15 sec
PIOMI

Step 8 Support for Non-Nutritive Sucking

PIOMI


Support for
Non-Nutritive Sucking
Improve suck
Improve soft palate activation
Duration: 2 minutes
PIOMI


Any
questions